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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,248	02/12/2004	Toshiaki Otsuki	392.1872	4162

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

CABRERA, ZOILA E

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,248

Applicant(s)

OTSUKI ET AL.

Examiner

Zoila E. Cabrera

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers


- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 2/12/04:7/8/04:8/5/05 

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 11, line 10, recites "obtaining an attitude of the tool". The specification does not describes how the attitude of a tool is obtained.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11, line 10 recites "obtaining an attitude of the tool", the metes and bounds of this limitation cannot be readily determined.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5-9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by **Coleman et al. (US 6,909,517)**.

1. A numerical control device for controlling a machine having an axis of linear motion and at least one axis of rotation on a tool head or a table (Figs. 1-2, 13A; Col. 1, lines 15-23), said numerical control device comprising: means for obtaining a machine position to which the machine should actually move so that the relation between a workpiece and a tool that is found when there is no mechanical error is maintained (Col. 4, lines 9-20) on the basis of a reference position at which there is no mechanical error in the axis of rotation and an amount of misalignment of the actual axis of rotation from the reference position (Col. 5, lines 58-61; Col. 6, lines 11-52; Col. 15, line 55- Col. 16, line 16), and/or on the basis of a reference position at which there is no mechanical error in the turning center of the spindle and an amount of misalignment of the actual turning center of the spindle from the reference position of the turning center of the spindle (Col. 14, lines 29-48; Fig. 4; Fig. 8; Col. 15, lines 41-47); and drive control means for driving the axis of rotation and the axis of linear motion to the machine position obtained by said machine position obtaining means (Col. 12, lines 27-31; Col. 15, lines 55 to Col. 16, line 16).

2. The numerical control device according to claim 1, wherein said tool head of the machine rotates about at least one axis (Col. 15, lines 59-61).

5. The numerical control device according to claim 1, wherein said amount of misalignment is set by a parameter in the numerical control device (Col. 16, lines 10-16).

6. The numerical control device according to claim 1, wherein the amount of misalignment is delivered to the numerical control device by a signal from the machine to the numerical control device (Col. 17, lines 33-44).

7. The numerical control device according to claim 1, wherein the amount of misalignment is delivered to the numerical control device by a signal from external equipment to the numerical control device (Col. 13, lines 10-15).

As for claim 8, the same citations applied to claim 1 above apply as well for this claim.

9. The numerical control method according to claim 8, wherein the tool head of the machine rotates about at least one axis, and said method further comprising the steps of: correcting the tool length vector on the basis of a reference position at which there is no mechanical error in the axis of rotation and an amount of misalignment of the actual

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axis of rotation from the reference position (Col. 14, line 57- Col. 15, line 32, please note that the claim is in the alternative, therefore, only one is needed), and/or a reference position at which there is no mechanical error in the turning center of the spindle, an amount of misalignment of the actual turning center of the spindle from the reference position of the turning center of the spindle, and instruction for the axis of rotation, and adding the instruction position vector to the corrected tool length vector and obtaining the machine position (Col. 15, lines 23-25).

As for claim 12, the same citations applied to claims 5-7 above apply as well for this claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-4 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Coleman et al. (US 6,909,517)** in view of **Bohez**, "Compensating for systematic errors in 5-axis NC machining".

Coleman discloses the limitations of claims 1 and 8 above but fails to specifically disclose the limitations of claims 3-4 and 10-11. However, Bohez discloses such limitations as follows:

3. The numerical control device according to claim 1, wherein said table of the machine rotates about at least one axis (Pages 393-394, Figs. 3-4).

4. The numerical control device according to claim 1, wherein said machine has the tool head and the table which rotate (Pages 393-394, Figs. 3-4).

10. The numerical control method according to claim 8, wherein the table of the machine rotates about at least one axis, said method further comprising the steps of: adding an offset of the origin of a table coordinate system to an instruction position in a table coordinate system and thereby obtaining an instruction position in the machine coordinate system (Page 393, Section 4); and correcting misalignment of the instruction position in the machine coordinate system on the basis of a reference position at which there is no mechanical error in the axis of rotation, an amount of misalignment of the

actual axis of rotation from the reference position, and the instruction position for the axis of rotation, obtaining a position where the axis of rotation has rotated to the rotation position according to the instruction, and adding a tool length vector to the position to obtain the machine position (Page 394, left column).

11. The numerical control method according to claim 8, wherein said machine has the tool head and table which rotate, said method comprising the steps of: adding an offset of the origin of a table coordinate system to a position instruction in the table coordinate system and thereby obtaining an instruction position in a machine coordinate system; obtaining an instruction position for which the misalignment has been corrected on the basis of an amount of misalignment of the actual axis of rotation provided to the table from a reference position at which there is no mechanical error in the axis of rotation and an instruction position for the axis of rotation; obtaining an attitude of the tool for which misalignment has been corrected on the basis of an amount of misalignment of the actual axis of rotation provided to the tool head from a reference position at which there is no mechanical error in an axis of rotation and the instruction position of the axis of rotation, in addition to a tool length vector; and obtaining a machine position from the instruction position for which the misalignment has been corrected and the attitude of the tool for which the misalignment has been corrected (Pages 393-394, Section 4);.

Therefore, it would have been obvious to a person of the ordinary skill in the art at the time the invention was made to combine the teachings of **Coleman** with the

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teachings of **Bohez** because it would provide an improved system for compensating errors and thereby achieving higher performance (Bohez, Abstract) in a 5 axis NC machine that includes a tool head and a table.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning communication or earlier communication from the examiner should be directed to Zoila Cabrera, whose telephone number is (571) 272-3738. The examiner can normally be reached on M-F from 8:00 a.m. to 5:30 p.m. EST (every other Friday).

If attempts to reach the examiner by phone fail, the examiner's supervisor, Leo Picard, can be reached on (571) 272-3749. Additionally, the fax phones for Art Unit 2125 are (571) 273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist at (703) 305-9600.



Zoila Cabrera
Primary Examiner
6/8/06